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V. HISTORICAL ASPECTS OF THE SURPLUS FOOD PRODUCTION  
OF THE UNITED STATES, 1862-1902.

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By WILLIAM TRIMBLE.

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The year 1862, memorable in the military annals of the United States, is noteworthy also in its agrarian history. In that year a number of laws were passed which have greatly affected our agricultural development. These were the Morrill Act, the homestead law, the bill for the establishment of a bureau of agriculture, the first Pacific Railway bill, and a series of enactments concerning slavery (including the emancipation proclamation).

This year was notable in our agrarian history, likewise, for the appearance of a comparatively new force, which then and in subsequent years has exerted an important influence upon the course of development within our country and upon its relations with other nations. This new factor was a recurring surplus of food products for an organized world market, of such dimensions and character as to constitute a new phenomenon.

In the time of the Civil War, however, only one food product was especially potent as a surplus, namely, wheat; and in this time of crisis wheat proved itself more powerful even than King Cotton, whose might southern statesmen had boasted. From the time of the repeal of the English corn laws in 1846, exports of wheat from the United States to England had been increasing; but a series of bad years in England, 1860-1864, together with abundant harvests in the United States during these years, brought a startling upward leap. The British wheat crop for the years 1858 and 1859 averaged 128,000,000 bushels, but for 1860-1864 the average was 30,000,000 bushels less, and in 1861 the crop which was to feed England in 1862 was no less than 40,000,000 bushels short of the average. The figures of exportations from the United States at this period are not altogether reconcilable one with the other, but on any basis the facts stand out clearly. A table in a report of the Department of Agriculture (for wheat and flour) is as follows:<sup>1</sup>

	Bushels.
1852-1856	19, 172, 830
1857-1861	28, 969, 749
1862-1866	40, 183, 518
1867-1871	35, 032, 409

<sup>1</sup> Yearbook of the United States Department of Agriculture, 1914, p. 668.

The volume on agriculture of the eighth census says that in 1862 wheat and flour were exported to the amount of 76,000,000 bushels, and in 1863 77,000,000 bushels; and of these amounts Great Britain took, respectively, 34,000,000 and 47,000,000 bushels.<sup>2</sup> If we confine our attention to wheat alone, we find that while the highest exportation for any one year prior to 1860 was 14,570,000 bushels, our figures leap in 1861 to 31,000,000, and in 1862 to 37,000,000 bushels. Now, in history human need is a mighty force, and, interpreted in terms of human need, these figures plainly show this much at least: Great Britain at a critical time in our Civil War was under stress for bread, and this stress could be well alleviated only from granaries whose keys were held by the Government which sat on the north side of the Potomac. England was clamoring also for cotton—export of which had dropped from 2,500,000 bales to 75,000. She was incensed at the blockade. Many of her leaders sympathized with the South. It did not look in 1862 as if the North could win out. There was grave chance, therefore, that England would interfere, and a motion was actually made in Parliament for recognition of the Confederacy—a motion which might have meant war with the North. But, asked a prominent English statesman in debating the question in Parliament, “What would be the cost of possible war reckoned in terms of corn?” The London Economist declared that without foreign importations of grain “our people could not exist at all.” Undeniably, the surplus of wheat produced by the North at this time was an important factor in restraining England from a course which might have produced an ominous situation for the Federal Government.<sup>3</sup>

These great exportations of wheat to England during the Civil War, moreover, only marked the beginning of the competition of American agricultural products, which, extending to meat as well as wheat, finally greatly affected the prosperity not only of English farmers, but of the farmers of western Europe in general. “Since 1862,” observes Prothero in his *English Farming, Past and Present*, “the tide of agricultural prosperity had ceased to flow; after 1874 it turned and rapidly ebbed.”<sup>4</sup> Our discussion of what happened after the latter date may be based on the following statistics of exportations (integers under a million being omitted from all but the last column):<sup>5</sup>

<sup>2</sup> Agriculture of the United States; compiled from the Original Returns of the Eighth Census (Washington, 1864), Introduction CXXXIX.

<sup>3</sup> The most complete discussion of this subject is by Schmidt, Louis B., *The Influence of Wheat and Cotton on Anglo-American Relations during the Civil War*. Iowa Journal of History and Politics, July, 1918; cf, also, Fite, Emerson D., *Social and Industrial Conditions in the North During the Civil War* (New York, 1910), pp. 17-23.

<sup>4</sup> Prothero, Rowland E., *English Farming Past and Present* (London and New York, 1917), p. 374.

<sup>5</sup> Yearbook of the United States Department of Agriculture, 1914, pp. 667-668.

Average.	Wheat and wheat products.	Corn and corn products.	Beef products.	Pork products.	Cheese.	Cattle.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
1852-1856.....	19 m.	7 m.	33 m.	103 m.	6 m.	1,431
1857-1861.....	28 m.	6 m.	40 m.	103 m.	13 m.	20,294
1862-1866.....	40 m.	12 m.	70 m.	252 m.	42 m.	6,531
1867-1871.....	35 m.	9 m.	54 m.	128 m.	52 m.	.....112
1872-1876.....	66 m.	38 m.	114 m.	568 m.	87 m.	45,672
1877-1881.....	133 m.	88 m.	218 m.	1,075 m.	129 m.	127,045

The remarkable increase is also clearly indicated by looking closely at exports of wheat and wheat flour on specific years. In 1873 the exportation was 91,000,000 bushels, the highest theretofore attained. The following years were lower, but in 1877 a new mark was made at 92,000,000. The next year, however, came a jump to 150,000,000 bushels, the next (1879) to 180,000,000, and in 1880 there were exported 186,000,000 bushels.

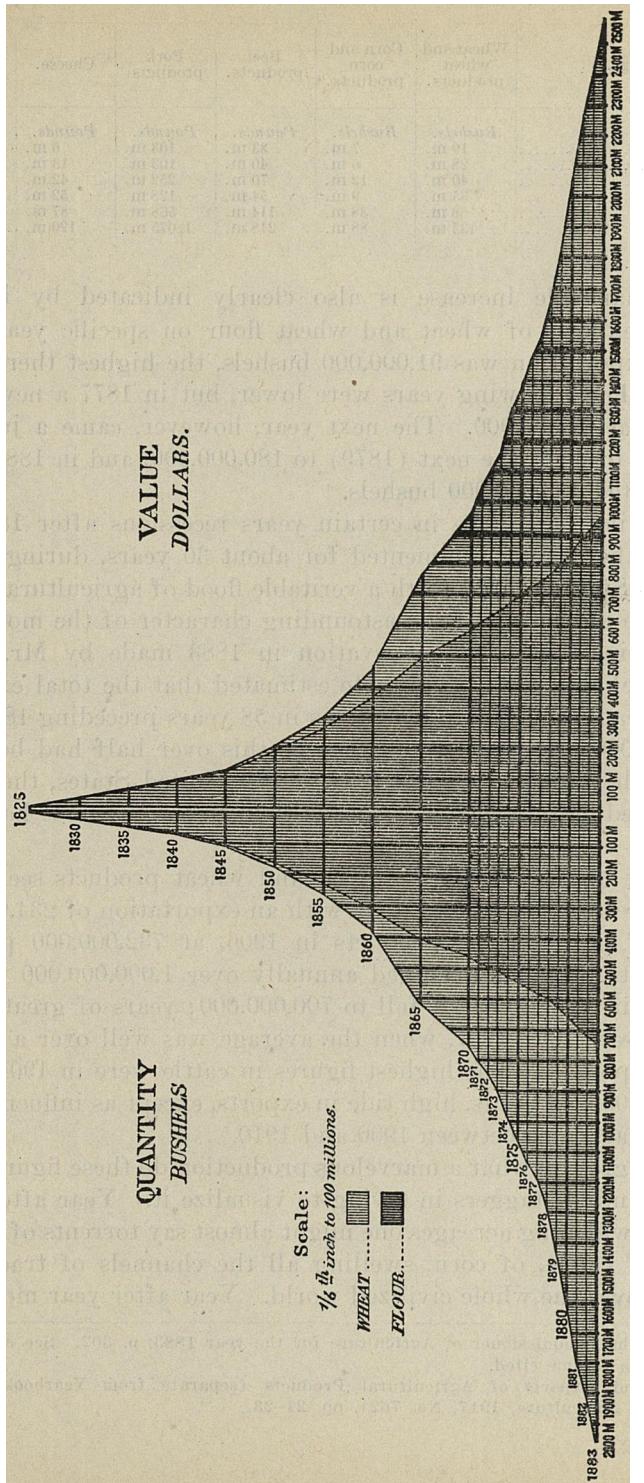
Now, while there were in certain years recessions after 1880, on the whole the surplus augmented for about 30 years, during which the United States poured forth a veritable flood of agricultural products. Some indication of the astounding character of the movement may be gained from an observation in 1883 made by Mr. J. R. Dodge, a reliable statistician. He estimated that the total exportation of wheat from the United States in 58 years preceding 1883 had been 2,064,000,000 bushels, and that of this over half had been exported in the nine years since 1874.<sup>6</sup> The United States, therefore, had exported more wheat in a decade than in the previous half century.

The crest of the surplus in wheat and wheat products seemed to have been reached in 1901 or 1902 with an exportation of 234,000,000 bushels; of beef and its products in 1906, at 732,000,000 pounds. Pork and its products averaged annually over 1,000,000,000 pounds until 1910, in which year it fell to 700,000,000; years of greatest exportation were 1897-1901, when the average was well over a billion and a half pounds. The highest figures in cattle were in 1904-1906, at over 500,000. That is, high tide in exports, except as influenced by the great war, came between 1900 and 1910.<sup>7</sup>

In the aggregate what a marvelous production do these figures suggest. The mind staggers in trying to visualize it. Year after year came from widening acreages one might almost say torrents of wheat, of pork, of cattle, of corn, swelling all the channels of trade and spreading over the whole civilized world. Year after year more and

<sup>6</sup> Report of the Commissioner of Agriculture for the year 1883, p. 302. See cut reproduced here from volume cited.

<sup>7</sup> Imports and Exports of Agricultural Products (separate from Yearbook of the Department of Agriculture, 1917, No. 762), pp. 21-23.



Diagram, showing the quantity and value of wheat exported from the United States in 58 years, including flour computed on wheat. Reproduced from Report of Commissioner of Agriculture, 1883, opposite page 302.

more freight cars creaked wearily with heavier and heavier loads to cities whose prosperity waxed higher and higher under the mighty stimulus. New devices were employed, new businesses sprang up, the ocean was covered with growing argosies. Industrial populations in our own East and in Europe had cheap support. Wheat-bread and beef, those princely perquisites, became the food of the masses; democracy could, thenceforth, fight its battles on something like a full stomach. We, who have become accustomed to a world production and shipment of food that never ceases throughout the year, can scarcely comprehend the tremendous effects of this then new phenomenon—to competitors, indeed, an appalling phenomenon. Dr. Alexander Peez, a member of the Austrian Reichsrath in the early eighties compared the possible effects of the American surplus in agriculture to the far-reaching transformations wrought in Europe by the precious metals imported from America in the sixteenth century, and hazarded the opinion that the rise of this surplus was the "greatest economic event of modern times."<sup>8</sup>

By 1910, however a change was apparent. Cattle dwindled in export to 139,000 in that year and to 18,376 in 1914, and we were even beginning to import beef. Pork in only one year reached the old billion-pound mark. Wheat exports amounted in 1910 to only 87,000,000 bushels. The most reliable idea of the changed conditions which have come about is apparent from certain percentages. The percentage of wheat exported (as compared with the total crop) was, in 1878, 35.8 per cent; in 1879, 40.2 per cent, figures much higher than the average of preceding years. Highest marks were made in 1893 at 41.5 per cent and in 1900 at 41.4 per cent. Since the latter date there has been a marked falling off. In 1904 we exported only 8 per cent of the crop, and the average 1904-1913 was only 15 per cent. More significant still are the changes in percentages of agricultural products (not including forest products) as compared with the total of exports of all sorts. A study by five-year periods shows that in 1857-1861 our agricultural products comprised more than four-fifths of the total, or 81.1 per cent. These figures, it should be explained, include cotton. There was a slight sag the next 15 years, but the average rose again to slightly over four-fifths, 1877-1881 (80.4 per cent). After that every five years witnessed a steady decline until in 1907-1911 the percentage stood at only 53.9.<sup>9</sup> The years 1912-1914 saw agricultural exports shrink to less than half. That is, the period of the supremacy of our agricultural export has passed. Manufacturing now leads, and under normal conditions our

<sup>8</sup> Peez, Alexander, "Die Amerikanische Concurrenz," Report of the Commissioner of Agriculture for the year 1883, pp. 337-342.

<sup>9</sup> Statistics for this paragraph are derived from a table in the Yearbook of the United States Department of Agriculture, 1914, p. 666.

scepter of supremacy in exportations of grain and beef has passed to Russia, Argentina, and Australia.

I by no means wish to assert that our agricultural exports since 1910 have become unimportant; nor do I wish to leave the impression that such exports were not a large item prior to 1860. Furthermore, I recognize the existence of agricultural exportations from other countries during the period 1860-1910. But the fact remains that the United States during the period 1862-1902 was definitely supreme in the rise of a great food surplus, that this was a new economic phenomenon, and that it produced very important economic and social effects.

Before turning to the discussion of these effects, however, let us consider the special case of exportations during the war. Total values because of high prices show remarkable figures; those for 1917, for example, reaching nearly \$2,000,000,000. Special items, as horses, also show phenomenal increases. But the old staples, reckoned in quantity measures, seem to offer nothing more than a temporary interruption to the general tendency set forth above. Exportations of cattle have continued almost negligible, and even beef products at the highest figures for the war have fallen more than 200,000,000 pounds under high marks of the surplus period. Pork products have approached, but not reached, the old height of a billion and a half pounds. Wheat and wheat flour, however, made a new record in 1915, based on the phenomenal crop of 1914, the exportation mounting to 332,000,000 bushels. Yet it must be borne in mind that our war-time exportations have reflected the following emergency conditions: (1) An exceedingly urgent demand and extremely high prices; (2) the almost complete cutting off of sources of supplies other than those of the United States and Canada; (3) unexampled economy by the American people under stress of very special incentives; (4) concentration upon staple crops at the expense of normal rotations. Moreover, even under these exceptional conditions the percentages of agricultural exports, as compared with manufactured, still substantiate the fact of the waning of agricultural supremacy. In 1914 and 1915 (while manufacturers were getting their war-time production under way and, on the other hand, crops were large), agricultural products constituted, respectively, 47.8 per cent and 54.3 per cent of our total exports; but in 1916, 1917, and 1918 they were, respectively, 35.5 per cent, 31.6 per cent, and 39 per cent. And these exports were not based on overflowing plenty, as in the time of our Civil War but (with the exception of wheat from the crop of 1914) were wrung from us by great need. Looking, on the other hand, at the magnitude of the effects due to these supplies, we may perceive once more the important character of the

surplus of our food products; for without this surplus it is hardly conceivable that the war would have resulted as it did.<sup>10</sup>

Let us return now to the consideration of the economic and social effects which attended the rise of the great surplus between 1862 and 1902. The effects of the surplus upon the United States were very important; but these will be alluded to later. Suffice here to say that food exportation in the seventies was of advantage in helping to accumulate a stock of gold for the resumption of specie payments in 1879; and that the great production all through the period greatly depressed agriculture in the Eastern States, though at the same time affording remarkably cheap food for the laboring classes of that section.

In Europe the consequences were of the most fundamental and far-reaching character. Historians of the agriculture of western Europe call the last quarter of the nineteenth century the crisis period, or a period of distress or even of ruination.

The preceding period had been one of great prosperity. The discoveries of gold in California and Australia and the development of markets in industrial centers had caused an era of good prices. Rents and land values advanced, production rose, many improvements were made. Competition was restricted to adjacent countries, and years of poor crops were generally years of high prices. Agriculture was based upon the old staples, chiefly grain and meat, and when one was down the other probably would be up. The repeal of the English tariff on grain in 1846 had resulted in a strengthening of English meat production without serious damage as yet to the grain interest; and continental countries, particularly Germany, found the English grain market highly profitable. Prices in Liverpool and London were the highest in Europe.

But suddenly European farmers found themselves confronted by a new and bewildering set of conditions. A succession of poor crops, after 1874, most marked in England, culminated in the "black year" of 1879, when low yields extended all over Europe—the worst year for crops in the century. But farmers were no longer helped out by high prices. America, plethoric with great crops, utilized the developing system of transportation to pour what seemed an avalanche of grain upon Europe. It appeared to penetrate everywhere; for example, American wheat began to be used in Bohemia, and Austrians and Hungarians stood aghast to see it sold even in the markets of Trieste and Fiume, the long-time places of exportation. Much study was given to this new phenomenon, and numerous pamphlets on the subject were put forth in Austria, Germany, France, and England. In the latter country a royal commission

<sup>10</sup> Consult Tables 193 and 195 of *Separate from Yearbook of the Department of Agriculture*, No. 762. Mr. Frank Andrews, of the Bureau of Crop Estimates, kindly furnished the author with additional statistical information.

was appointed in 1879 and another in 1893 which made exhaustive investigations through several years.

The pith of the discussion was that no relief could be expected in conditions across the seas within a generation. It was pointed out that the United States had vast areas of new lands on which there were practically no rental charges; that the farmers could get horses at lower cost than in Europe and feed them more cheaply; that machinery was employed of a perfection and on a scale unequaled in Europe; that political freedom and the lack of caste generated initiative, intelligence, and resourcefulness; that the organization and development of transportational agencies of all sorts, particularly with regard to through traffic, made continuance of competition inevitable; and that, while the United States was most to be feared, Russia, India, Argentina, and Australia were looming up.<sup>11</sup>

Among the measures advocated for meeting this competition was that of placing high tariff duties on grain. Three reasons, however, were opposed. It was felt that such duties would be unavailing. "By such means as grain tariffs," said a writer from Leipsic, "so mighty and revolutionary a movement as is called forth by transmarine competition can not be banished. There are those, and their number is increasing, that think nothing further can be done but to leave the supplying of Europe with cereals to America." In the second place such protection would be a handicap in industrial progress, unless made international, and England would never enter into such an agreement. England, in fact, as an Austrian essayist somewhat bitterly pointed out, had become "superindustrial" and was forging "out of the great production of America a new weapon against the continental industries." Low prices of food sustained her "policy of dominating the manufacture of the world and controlling its commercial distribution." Finally, after all, these importations were recognized by some as an immense blessing to the laboring and industrial classes. A Berlin pamphleteer, after recalling how frequently actual famine had come upon the countries of Europe, said, "We must remember these things in order to appreciate the boundless blessings conferred upon the population of Europe by the shipments from transmarine sources."<sup>12</sup>

The real remedies which were urged were to forsake the attitude of contempt which was customarily held with regard to things American and to face conditions. "The German farmer," wrote an economist from Jena, "must let go his hold on the traditions of the past; he must arouse his energies and adapt himself to the demands and circumstances of the time. Agriculture is not what it was 20

<sup>11</sup> See résumé by Heinrich Semler on "Die wahre Bedeutung und die Ursachen der Nord-Amerikanischen Concurrenz," in Report of the Commissioner of Agriculture for the year 1883, p. 346.

<sup>12</sup> The quotations of the above paragraph will be found in translations of documents found in Report of the Commissioner of Agriculture for the year 1883, pp. 337-350.

years ago, yes, 10 years ago. German farming must be revolutionized and that promptly. The cost of production must be reduced, and this can be done by labor, time, and money-saving machinery." Special emphasis was laid upon the bettering of European systems of transportation.

Another plan set forth in several countries was that of turning to stock-raising. This was especially followed in England, in which country the area devoted to wheat decreased between 1878 and 1907 from about 3,000,000 acres to 1,500,000, most of this land reverting to pasture. But while the full effects of foreign competition in meat were not to be revealed until about 1885, yet conditions in the later seventies were already ominous. The English farmer up to that time had always been able to rely upon the old adage of "Down corn, up horn," and in Scotland especially the main reliance of farmers had been their beef. But in 1875 a new application of American ingenuity was made to beef transportation, and within a year or two panic seized upon British producers of beef. There had been some attempts at transportation of live beef across the Atlantic previously, one of these having been that of Mr. Nelson Morris in 1868; but these shipments had not been very successful. The next year refrigeration was begun in railroad transportation, and on October 1, 1875, Mr. T. C. Eastman shipped from New York the first cargo of dressed beef to be preserved by the process of fanning air off of ice upon the beef. The shipment was successful, and other parties entered the business. The trade jumped rapidly month by month from the 36,000 pounds of the first shipment, so that within a year more than 2,000,000 pounds per month were being exported, and by April, 1877, more than 8,000,000 pounds. In all, the two years following October, 1875, saw 60,000,000 pounds shipped to Great Britain, and the business thereafter grew rapidly.

Farmers in Great Britain and Scotland were in dismay as they considered these shipments. They had heard vague stories of the vast herds of Texas pasturing on free land, of the great droves which were beginning to appear at the stations on new lines of railway in the West, of the almost unbelievable increases in numbers of animals brought annually to Chicago. And now this new process was to bring these great herds, one might say, almost to one's door. So great was the interest that the Scotsman, a leading paper of Scotland, sent an expert animal husbandry man, Mr. Joseph MacDonald, to the United States to study the conditions. MacDonald, after visiting New York, traveled through all parts of the United States where cattle production was important, and his letters to his home paper were gathered together in a book entitled "Food From the Far West."<sup>13</sup>

<sup>13</sup> MacDonald, James, *Food from the Far West, or American Agriculture with Special Reference to the Beef Production and Importation of Dead Meat from America to Great Britain* (London and Edinburgh, 1878).

He saw plainly that the beef of Texas of the type then existent there would not compete directly with the English and Scotch product. As a matter of fact, Texas beef mostly went into cans in Chicago, and some of it helped to fill the stomachs of soldiers of England who were extending the frontiers of the empire in Africa and other regions. The beef which might compete and which actually was the source of exportations came mostly from the corn regions of the Central States, where considerable improvement in breeding was manifest. The careful Scotchman summarized his views by stating that while disaster was not at hand, yet a "new opponent, not death-bearing but formidable, and gradually becoming more so, has come into the field." Careful and skilled farmers would be able to meet competition, but they should remember that the improvement in the quality of the American beef would be great in the next 10 years, that there was no probability that the cost of producing such beef would rise within a generation and that after about two years "we may expect that American beef of really good quality will be poured in upon us in large and steady supplies."

The prediction of Mr. MacDonald proved true, and might have been equally applied to other food products. There was a lull, to be sure, in exportations in the early eighties owing in part to very poor crops in the United States in 1881; but after 1885 came a deluge of products which did not slacken until after the end of the century.

The effects upon the agricultural classes of Europe were most serious. Wheat, corn, meat of all kinds, wool, petroleum, textiles piled in. Every one who had a legal interest in land—lords of great estates, small proprietors, farmers on long leases—all suffered. Prices of agricultural products greatly diminished. The price of wheat in Germany, for example, sank nearly 27 per cent between 1871 and 1891, and in following years went lower still. In Sweden wheat sold at 16.4 crowns per hectoliter in 1861–1865, rose to 17.5 in 1866–1870, and thence sank steadily for each five-year period until it touched bottom at 11.22 at the turning of the century. British figures reveal the same story.

*Great Britain triennial average per quarter.<sup>14</sup>*

	Wheat.	Barley.	Oats.	Cattle, per stone of 8 pounds.		
				Inferior quality.	Second.	First.
				s. d.	s. d.	s. d.
1876–1878.....	49 9	38 4	25 6	4 5	5 6	6 0
1893–1895.....	24 1	24 0	16 9	2 8	4 0	4 7
Decrease.....per cent..	52	37	34	40	27	24

<sup>14</sup> Curtler, W. H. R., *A Short History of English Agriculture* (Oxford, 1909), p. 312.

Sheep fell on the average between 1874 and 1891, 20 to 30 per cent, wool 40 to 50 per cent, milk, butter, and cheese, 25 to 33 per cent, but the reduction in the price of milk was much less near large cities.

Could we translate these dry statistics into terms of human lives—rents and debts that could not be met, opportunities for recreation that could no longer be had, deprivation of comforts, and even necessities of life, anxieties, gloom, utter hopelessness—we should comprehend more vividly their meaning. The small landowner of the older type under this pressure nearly disappeared from England. Men would not stay on the small farms. Said one of this class: "A foreman who earns a pound a week is better off than I am. He has no anxiety and not half the work." Many of the farmers were ruined and became mere laborers. "In Norfolk 20 or 30 years ago no class connected with the land held their heads higher than the farmers. The typical Norfolk farmer of to-day is a harassed and hard-working man, engaged in the struggle to make both ends meet."<sup>16</sup> Improved farming methods did not help matters; in fact, became impossible for awhile. The occasional farmer by special management—as, for example, feeding roots to cattle—might thrive, but in general "high" farming succumbed to the law of diminishing returns.

Nor did landlords by any means escape. The fall in rents on the great estates of the six eastern provinces of Prussia amounted to between 20 and 30 per cent. In England the counties most seriously affected were the rich grain-growing counties such as Essex and Lincoln; in these rents fell as much as 75–100 per cent. The condition of cattle-raising counties was better, North Devon showing a loss of only 10 to 15 per cent. The average reduction was probably over 30 per cent. Sir James Caird estimated as early as 1886 that the losses to the agricultural community of Great Britain for the previous ten years had averaged not less than £42,000,000 annually. More significant still are the figures on land values: the capital value of land in the United Kingdom in 1875 was £2,007,330,000 and in 1894 it was £1,001,829,000, a decrease of 49.6 per cent.

Nor were decreasing prices and rents all that the European landowners then had to face. There was a marked rise in production costs. Wages of farm labor rose, a fact particularly true in Germany where industrialization and emigration caused bidding for workmen and migration of agricultural laborers. There was an increase also of taxes in both England and Germany due in large degree to new undertakings for social betterment. Landlords truly were thus caught (to use a trite figure) between the upper and the nether millstones. Many British landowners were compelled to give up their estates, while others were able to retain their homes only by moving into some cottage and renting the big house. Curtler sums up his

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<sup>16</sup> Quoted by Curtler, *ibid.* p. 308.

discussion on this point by saying that the agricultural depression "may in short be said to have effected a minor social revolution, and to have completed the ruin of the old landed aristocracy as a class."<sup>16</sup> Those who survived did so because they had other sources of income than agriculture. A like revolution took place in Holland.

Two comments which are pertinent to the low prices of this period may here be made. The first is that such prices were not confined to agricultural products. In fact there was a world-wide sag in prices, due, I think, to declining yields of gold at the same time that gold was made the sole redemption basis of the world's currency. The five years 1886-1890 witnessed a total world yield of only \$564,000,-000, whereas the five years which ushered in our new prosperity of 1896-1900 enjoyed the comfortable total of \$1,286,000,000. But it is true that the general depression was greatly intensified for European agriculturists by the competition of America.

The second comment which I would venture is that the full effects of the repeal of the corn laws in England in 1846 were not evident until a third of a century later. Neither the opponents nor the supporters of that repeal could have foreseen the terrific competition which practically ruined a generation of English farmers. It may be worth noticing that practically the same tariff conditions have been brought about in the United States. It is significant that in response to the desire of our manufacturing population, we apparently have entered upon a policy of free trade in our main agricultural staples. The possibilities of competition depend upon so many factors that we may not attempt to discuss them here. Suffice it to say that the newly aroused interest of our farmers in subjects which politically affect them receives impressive sanction from the study of the effects upon the farming interest in England of the policy of free trade in agricultural products.

Returning now to consequences of American competition upon Europe, let us consider the effect upon the numbers of the agricultural population, including therein the agricultural laborers. The latter class on the whole were eventually better off, although there was profound disturbance of old conditions. The increasing application of machinery to agriculture (itself in part one of the results of competition) deprived many laborers of jobs. This was especially true with regard to the use of threshing machines. It had been a general custom in many regions to reserve threshing for the winter months, thereby giving winter employment to laborers. But the coming of the threshing machine, of course, did away with this. At the same time, however, there was the call of the new industries in the towns (for in Germany and Scandinavia industrialization pro-

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<sup>16</sup> *Ibid.*, p. 310.

ceeded rapidly during this period); and also there was the lure of far-off America, where every man could become a landowner and a gentleman, and no one was compelled to serve in the Army. Thus it came about that new opportunities, new forces stirred the somewhat sluggish currents of European village life. The effects upon the rural districts were very great. In Sweden in 1870 there were 101,113 agricultural day laborers; in 1900 there were 54,238. In 1870 there were in that country 95,388 "torps" or small rented farms, having on them 480,000 people; in 1900 there were 72,252 having 347,000 people.<sup>17</sup> There was a marked disproportion in percentages of people of the productive ages 15 to 45. In England the number of agricultural laborers decreased from 996,642 in 1871 to 595,702 in 1901. "Their material condition had everywhere improved," says one writer, "though there were still striking differences in the wages paid in different parts; and the improvement, though partly due to increased earnings, was mainly attributable to the cheapening of the necessities of life."<sup>18</sup> What this cheapening of the necessities of life meant to the laboring classes in England, in town and country, may be judged from the statement of Gibbins that the supply of wheat alone for the population of 36,000,000 in 1885 cost £10,000,000 (\$48,500,000) less than that for 27,000,000 in 1851; although meanwhile the per capita consumption had increased 83 pounds.<sup>19</sup>

A summary of the effects of American competition as they presented themselves in 1880 was made by Prof. William H. Brewer as follows:

Our agricultural productions and our agricultural methods, with the facts pertaining to them, have in one way or another become important factors of disturbance in the political and social economy of Europe, showing themselves in a variety of ways; here by the reduction of rents, there by the decrease of the value of agricultural lands, or by the increase of the use of improved agricultural implements and machines, by the decrease of prices of home-grown productions, by changes in courses of cropping, by modifications in landholdings, by distress among farmers, by emigration, by political uneasiness, and so on through a long list of effects, some immediately and others more remotely related to American agricultural competition.<sup>20</sup>

A few specific additions of a most important character may be made to the foregoing enumeration. One of the important means of escape from hard conditions was through cooperative enterprises.

<sup>17</sup> I am indebted for these figures to Mr. Martin Hagen, a scholarly student in a class in the history of agriculture, who made some interesting investigations in the history of Scandinavian agriculture.

<sup>18</sup> Curtler, *op. cit.*, p. 311.

<sup>19</sup> Gibbins, Henry de Beltgens, *Economic and Industrial Progress of the Century* (1901), p. 373.

<sup>20</sup> Brewer, William H., *Report on the Cereal Production of the United States*, p. 9, Tenth Census, Vol. III, Agriculture.

While these had in many cases antecedents prior to 1860, yet their great growth has come since that time. Rural credits, a matter closely affiliated with cooperation, was also greatly facilitated as a result of the stress of the period. Another very important development was that of home colonization. This had its origin in the desire to keep available the vanishing agricultural laborers and in general to try to give to sturdy citizens a chance to own some land in their own country on condition of efficient use. European society, it may be said, reacted to stressful conditions by evolving these three powerful and promising forms of social and economic mechanism—forms which are factors in the great world-wide agrarian revolution which has been under way.

Our survey of European conditions has perhaps detained us too long, and I shall try the reader's patience by only a very brief and cursory summary of facts which I had hoped to treat under a third general topic, viz, the sources in the United States of the great surplus—a subject demanding for adequate treatment, however, a complete paper.

The surplus was based mainly on utilization—some would say exploitation—of the treeless areas of the United States, the prairies and the Great Plains. Production maps of the period show that corn after 1860 found its best habitat in the black soil districts of Illinois, Iowa, and eastern Nebraska and Kansas; that, while the growing of winter wheat increased over vast districts, spring wheat progressed to its greatest home in the Northwest; that wheat culture on a large scale moreover was appearing in remote and unique regions—the valleys of California and the plateau of the Columbia; that mighty herds of cattle were displacing the buffalo on the vast ranges of the Great Plains; and, finally that sheep in bands greater than had hitherto been known to American agriculture were filling in the grassy areas of the Rockies. The soils and grasses of the nonwoodland West therefore made possible a production on a scale before unknown in the history of the world.

A labor force adequate for quantity production spread itself swiftly over the prairies and out upon the ranges. To these open tracts population was invited by the most favorable land laws that any nation has ever evolved; the stockmen were simply allowed to trespass as they would upon the public domain, while cultivators responded to enticements of easy acquisition of title. To the method of acquisition of land by cheap purchase under preemption were added in this period (in addition to less important ways) the enormous stimuli of free homesteads and of low priced and widely advertised railroad lands. Railroads by 1883 had certified or patented slightly over 547,000,000 acres; but no figures are available as to the amounts of land they had transferred to settlers. As to home-

steads we have more satisfactory data. By 1883 somewhat more than 75,000,000 acres had been filed upon by about 640,000 persons, representing a population by families, we may say, of well over 2,000,000.<sup>21</sup>

Still more enlightening as to the process which was going on are the statistics of land in farms and land improved. In the whole history of the United States up to 1870 there had been incorporated into farms 407,735,041 acres of lands; in the three decades following 1870 there were added more than 430,000,000 acres. That is, in one generation more land was settled than in all our preceding history. Even more significant are the statistics with regard to improved lands. In 1870 there were 188,921,099 acres classified by the census as improved, this improvement being the result of the labors of American farmers from 1607 to that date; in the next 10 years 95,849,943 acres (or 50.7 per cent) were added, and in the three decades 1870-1900, 225,000,000 acres.<sup>22</sup> I beg leave to call special attention to this basic fact in the history of the United States during this time, that the amount of land improved by the farmers of the United States in these three decades exceeded by 37,000,000 acres the amount improved by all of their predecessors.

Immigration of a most desirable type of farmers aided in this great achievement. More than 5,000,000 persons came to our shores between 1860 and 1880, the number reaching startlingly high proportions in 1879, with a total of more than three-quarters of a million.<sup>23</sup> While the larger part of the immigrants went into occupations other than agriculture, great numbers of those best fitted for farming took up lands in the West. It is significant, moreover, that in the decade 1870-1880 the relative decline of rural inhabitants compared with the population as a whole, which had obtained from 1790 onward, was in this decade temporarily stayed.

The population which took possession of the prairies equipped itself with machinery adequate to quantity production. Both the character of the former and the physiography of the latter contributed to the use of machinery on a scale never before approximated. Out on the prairies the black soil rolled in easy furrows under the gang plows, the cultivators no longer jangled through stony, stumpy ground, and harvesting machinery could be used without apprehension of obstacles. One catches a glimpse of forces at work from remarks of Sir James Caird, which were based on a tour made in 1857. Speaking concerning the State of Ohio (whence a considerable portion both of the population and the machinery of the prairies was drawn), he noted that Ohio in 1857 had manu-

<sup>21</sup> Donaldson, Thomas, *The Public Domain* (Washington, 1884), pp. 1263, 1284.

<sup>22</sup> Thirteenth Census of the United States, V, 51, 57.

<sup>23</sup> Statistical Abstract of the United States, 1917, p. 106.

factured seven times as many reaping and mowing machines as all England, and was expending upon public schools more money than was England.<sup>24</sup> While the reaper had largely superseded before 1860 the slow processes of the old sickle and the newer cradle, it remained for the seventies by the development of the self-binder to relieve the farmer of the tedious drudgery of tying sheaves. Soon long lines of clicking binders in the Red River Valley accentuated large-scale production and caught the imagination of the world, while in California great combined machines cut and threshed more grain in a week than the average European peasant could hope to raise in a life-time. The use of such machinery was made the more feasible because of low cost of horses and cheapness of provender, factors tending to lower the labor cost as compared with European costs.

Another powerful factor in the development of quantity production was facilities for marketing. Railroads, of course, were primary. The mileage which in 1862 amounted to 31,000 miles, a decade later had extended to 66,000, in two decades to 114,000, and by 1902 had become more than 200,000.<sup>25</sup> Efficiency kept pace with mileage, especially with respect to facilities for through traffic, and charges lessened rapidly. Water transportation also contributed to lower haulage cost. The elevator system spread rapidly, and travelers from Europe were deeply impressed by these tall, slender, ugly buildings (as Sering, a German writer, calls them) which reared themselves throughout the grain districts, feeders for the great terminal structures of the West and for the finely equipped plants on the harbors of the Atlantic. No human hand, Sering wonderingly observed, was applied directly to the mass of grain from the time it left the farmer's wagon until it was poured forth in Bremen or Hamburg.<sup>26</sup> Handling grain in mass necessitated use of grades, and this in turn facilitated financial exchanges. All this simplification for large-scale business was greatly in contrast to the small, blundering ways of doing things characteristic in the European trade. In fact, the whole system of grain transportation and exchange, as it grew up in the United States after 1870, made possible for grain growers the first market of world dimensions.

But the entrance upon a world market, in conjunction with fluctuations in currency values and over stimulation of production reacted not altogether happily upon the farmers of the prairies. It is significant that the rise of organized discontent on a large scale among farmers in the United States synchronizes with the develop-

<sup>24</sup> Caird, James, *Prairie Farming in America* (New York, 1859), p. 121.

<sup>25</sup> Statistical Abstract of the United States, 1917, p. 296.

<sup>26</sup> Sering, Max, *Die landwirtschaftliche Konkurrenz Nordamerikas in Gegenwart und Zukunft* (Leipzig, 1887), pp. 498-502.

ment of quantity production for a world market. As Sering mentions, there was a crisis in agriculture in America as well as in Europe.<sup>27</sup> It is during this period, we may notice, that one of the chief motives of the foreign policy of our Government was to find markets for food products.

In closing, we may mention that agriculture in the United States during the period under consideration moved out of the worn and humdrum ruts of the ages and took on a new aspect. Unique areas were opened up; new processes were invented and applied on a big scale. Even romance was not lacking, as the picturesque life of the range attests. Most important of all, the farmer ceased to be "the man with the hoe" and became the man who gazes upon life and upon his fellow-citizens from a seat upon machinery.

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<sup>27</sup> *Ibid.*, pp. 578-580.